

Customer No.: 31561  
Docket No.: 12468-US-PA  
Application No.: 10/709,036

### **REMARKS**

#### **Present Status of the Application**

The Office Action remains rejections on claims 1-7. Specifically, claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naumov et al. (U. S. Patent 6,875,950; hereinafter Naumov) in view of Im (U. S. Pub. 2005/0059265), Girard et al. (U. S. Patent 6,146,813; hereinafter Girard), and Poon et al. (U. S. Patent 6,897,118; hereinafter Poon). In addition, claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naumov in view of Im, Girard, Poon and Taylor (U. S. Patent 6,216,545). Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naumov in view of Im, Girard, Poon, Taylor, and Wortedge et al. (U. S. Patent 6,927,569; hereinafter Wortedge). Claims 1-7 remain pending in the present application, and reconsideration of those claims is respectfully requested.

#### **Discussion of Claim Rejections under 35 USC 103**

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naumov in view of Im, Girard, and Poon. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naumov in view of Im, Girard, Poon and Taylor. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naumov in view of Im, Girard, Poon, Taylor, and Wortedge. Applicants respectfully traverse the rejections for at least the reasons set forth below.

1. As previously mentioned, the claimed invention can simultaneously adjust the laser annealing energy for annealing the amorphous silicon thin film, according to the measured

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resistance of the annealed silicon, which is changing from amorphous silicon to the polysilicon with varying sheet resistance.

2. The Office Action newly cites Im, Poon, Worledge, and Taylor in combination with Naumov and Girard for rejections. Particularly, the Office Action refers to Im about *"exceimer laser having a dynamically adjustable energy density (Emphasis added)"*. In addition, the Office Action refers to Poon about *"selection of the proper laser annealing parameters is optimized by observation of reduction of sheet resistance and concentration profile as measured on a test site (Emphasis added)"*. Applicants respectfully disagree.

3. In re Im, as described in [0062], the attenuator 14 can be a variable attenuator, e.g., having a dynamic range of 10 to 1, capable of adjusting the energy density of the generated laser beam pulses 42. In addition ([0063] and Fig. 8), the laser beam 43 from the laser source 12 is modified to produce the laser beam 42a. Usually, the laser beam 42 has high energy density. The laser energy of laser beam 42 can be attenuated (with the scale from 10 to 1) to a lower constant laser energy. There is no any disclosure from Im that the laser energy is dynamically and simultaneously adjusted according to the sheet resistance of the thin film 36.

In other words, Im discloses that the laser energy can be set to a constant proper energy but does not specifically discloses that the laser energy is dynamically and simultaneously adjusted according to the sheet resistance of the thin film as recited in independent claim 1.

4. In re Poon, as stated by the Office Action, the selection of laser parameters is

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optimized by observation of sheet resistance on a test site. This means that the sheet resistance is not observed from the thin film, which is under annealing. The selection could be just based on a database of test data.

Therefore, Poon does not disclose the arrangement of the present invention while considering the invention as a whole.

5. As previously discussed, Naumov and Girard are nonanalogous to the present invention and also fail to disclose the laser annealing apparatus of the present invention.

Even if Im and Poon are further cited in combination made by the Office Action, Im and Poon still fail to specifically disclose the present invention, for at least the foregoing reasons.

Further, basically, Naumov and Girard are in different structure in different operational function from the present invention. The Office Action further cite many additional prior art references in combinations. This also implies that the present invention is non-obvious although the combination is still failing to disclose the features of the present invention. Applicants respectfully remind that "*hindsight*" should not be involved in considering patentability of the present invention.

6. Taylor and Worledge do not further supply the foregoing missing features.

For at least the foregoing reasons, Applicants respectfully submit that independent claim 1 patently defines over the prior art references, and should be allowed. For at least the same reasons, dependent claims 2-7 patently define over the prior art references as well.

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**CONCLUSION**

For at least the foregoing reasons, it is believed that all the pending claims 1-7 of the invention patentably define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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